



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/762,691

01/22/2004

Naoki Komai

09792909-5775

5255

26263 7590 05/24/2007
SONNENSCHN NATH & ROSENTHAL LLP
P.O. BOX 061080
WACKER DRIVE STATION, SEARS TOWER
CHICAGO, IL 60606-1080

EXAMINER

SMITH, NICHOLAS A

ART UNIT

PAPER NUMBER

1742

MAIL DATE

DELIVERY MODE

05/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/762,691

Applicant(s)

KOMAI ET AL.

Examiner

Nicholas A. Smith

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 4-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 1-3 remain for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Talieh (US Patent 6,176,992).
4. Talieh discloses (Fig. 1B, col. 3, line 66 to col. 5, line 31) an apparatus comprising: a polishing surface plate (**30, 31** and base) including an electrode (**63**) and turnably disposed (Figure 1B); a porous polishing pad (**32**) disposed on a polishing surface plate capable of conductivity; a substrate holding unit (**16**) with a work surface (bottom of wafer) of a work substrate (Wafer) and turnably disposed (Figure 1B) and opposed to a polishing surface of a polishing pad (**32**); an another electrode (**28**) in contact with a work surface in a region that is an outer circumferential portion of said work surface disposed outside of said polishing surface of said polishing pad; a chemical supply unit (**44**) capable of delivering a chemical liquid onto a polishing pad (**32**); and a power source capable of delivering the claimed polarity (col. 5, lines 16-31).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Talieh in regards to claim 1 as stated above, in view of Duboust et al. (US 2003/0116446), further in view of Chang et al. (US 6,206,760), and further in view of Kondo et al. (US 2002/0061722).

7. Talieh discloses a chemical supply unit (Fig. 1B, 44).

8. Talieh et al. does not specifically disclose at least one unit for supplying said electropolishing liquid in a controlled flow rate by said chemical liquid control unit as claimed.

9. Duboust et al. pertains to electrochemical mechanical polishing (ECMP) (paragraph [0011]) and is in the same field of endeavor as Talieh. Duboust et al. teaches a method and a unit for controlling electrolyte composition as claimed (paragraphs [0028]-[0036]). It would have been obvious to one of ordinary skill in the art to modify Talieh's ECMP apparatus with Duboust et al.'s means for controlling electrolyte composition in order to regulate a continuous system and to avoid interference with other system additives (Duboust et al., paragraph [0008]).

10. Talieh in view of Duboust et al. teach a means for supplying electropolishing liquid in a controlled flow rate by said chemical control liquid unit.

Art Unit: 1742

11. However, Talieh in view of Duboust et al. do not specifically teach a means for delivering individually controlled flow rates of pure water as claimed.

12. Chang et al. pertains to chemical mechanical polishing (CMP), which is in the same field of endeavor with those concerned with planarizing or polishing semiconductor surfaces (Chang et al., abstract; Duboust et al., abstract; Talieh, col. 5, lines 16-31). Chang et al. teaches means for individually controlled cleaning solution of DI water (col. 6, lines 13-57). It would have been obvious to one of ordinary skill in the art to modify Talieh in view of Duboust et al.'s planarizing apparatus with Chang et al.'s means for individually controlling cleaning solution in order to remove foreign substances from the CMP apparatus and reduce contamination (Chang et al., col. 6, lines 48-57).

13. Talieh in view of Duboust et al. and further in view of Chang et al. teach a means for supplying individually controlled electropolishing liquid and pure water.

14. However, Talieh in view of Duboust et al. and further in view of Chang et al. do not specifically teach a means for delivering individually controlled flow rates of free abrasive grains as interpreted by means-plus-function language supported in the specification at page 21, line 8 to line 15.

15. Kondo et al. pertains to chemical mechanical polishing (CMP), which is in the same field of endeavor with those concerned with planarizing or polishing semiconductor surfaces (Chang et al., abstract; Duboust et al., abstract; Talieh, col. 5, lines 16-31; Kondo et al., paragraph [0002]). Kondo et al. teaches means for individually controlled free abrasive grains (paragraphs [0053]-[0056], Figure 1). It

Art Unit: 1742

would have been obvious to one of ordinary skill in the art to modify Talieh in view of Duboust et al. and further in view of Hong et al.'s planarizing apparatus with Kondo et al.'s means for individually controlled free abrasive grains in order to produce an accurate polishing rate (Kondo et al., paragraph [0002]).

16. Therefore, Talieh et al. in view of Duboust et al., further in view of Chang et al. and further in view of Kondo et al. teaches a system that is capable of individually controlling the quantities of electropolishing liquid, free abrasive grains, and pure water supplied *as claimed*.

17. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Talieh regards to claim 1 as stated above, in view of Duboust et al.

18. Talieh does not specifically disclose a cup for receiving a chemical liquid discharged from the top of said polishing pad, said cup provided around side periphery of said polishing surface plate and on the bottom side of the said polishing surface plate or a chemical liquid discharge unit provided in said cup at a position lower than said polishing surface plate.

19. Duboust et al. teaches a cup (**202**, Figure 1) for receiving a chemical liquid discharged from the top of said polishing pad, said cup (**202**, Figure 1) provided around side periphery of said polishing surface plate and on the bottom side of the said polishing surface plate or a chemical liquid discharge unit (**214**, Figure 1) provided in said cup at a position lower than said polishing surface plate. It would have been obvious to one of ordinary skill in the art to modify Talieh's ECMP apparatus with

Art Unit: 1742

Duboust et al.'s cup and chemical liquid discharge unit in order recycle and recondition the used polishing solution (Duboust et al., paragraph [0028]).

Response to Arguments

20. Applicant's arguments with respect to claims 1-3 have been considered but are moot in view of the new ground(s) of rejection. Please see reasons stated above.

Conclusion

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

22. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas A. Smith whose telephone number is (571)-272-8760. The examiner can normally be reached on 8:30 AM to 5:00 PM, Monday through Friday.

Art Unit: 1742

24. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571)-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

25. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NAS

SUPERVISOR
TECH

ROY KING

EXAMINER
200